

WHAT IS CLAIMED IS:

1. A digital broadcast receiving apparatus configured to multiplex packets corresponding to necessary-packet identifiers (Hereinbelow, a "packet identifier" is referred to as a "PID".) in a first transport stream (Hereinbelow, a "transport stream" is referred to as a "TS".) with packets corresponding to necessary PIDs in a second TS.

2. A digital broadcast receiving apparatus configured such that overwriting of packets corresponding to necessary PIDs in a second TS is performed to unnecessary-packet areas corresponding to unnecessary PIDs in a first TS.

3. A digital broadcast receiving apparatus configured such that packets corresponding to necessary PIDs in a first TS are extracted, packets corresponding to necessary PIDs in a second TS are extracted, and insertion is performed so that said packets extracted from the first TS and the packets extracted from the second TS are mutually inserted.

4. A digital broadcast receiving apparatus as defined in claim 1, configured such that, when packets to be multiplexed by either the overwriting or the insertion, the packets on at least one of the TS sides are rewritten to

make the packets to be different from one another.

5. A digital broadcast receiving apparatus as defined in claim 4, configured such that PIDs of packets on the TS side where packets are added through the overwriting are rewritten.

6. A digital broadcast receiving apparatus as defined in claim 2, configured such that, as said unnecessary-packet areas corresponding to the unnecessary PIDs, NULL-packet areas are given priority.

7. A digital broadcast receiving apparatus comprising:

unnecessary-packet detecting means for detecting unnecessary-packet areas corresponding to unnecessary PIDs in a first TS that is input;

necessary-packet extracting means for extracting packets corresponding to necessary PIDs in a second TS; and

packet-overwriting means for overwriting packets extracted by said necessary-packet extracting means to said unnecessary-packet areas detected by said unnecessary-packet detecting means in the TS.

8. A digital broadcast receiving apparatus comprising:

first necessary-packet extracting means for extracting packets corresponding to necessary PIDs in a first TS that is input;

second necessary-packet extracting means for extracting packets corresponding to necessary PIDs in a second TS that is input; and

packet-inserting means for performing insertion of said packets on the two TS sides to be mutually inserted to thereby generate a new TS.

9. A digital broadcast receiving apparatus as defined in claim 7, comprising:

identical-PID determining means for performing determination whether identical PIDs exist on the two TS sides of the packets that are to be multiplexed with each other through said overwriting; and

PID-converting means for performing rewriting of PIDs of packets on at least one of the two TS sides so that opponent-side PIDs are differentiated therefrom for packets that are determined by said identical-PID determining means to have identical PIDs.

10. A digital broadcast receiving apparatus as defined in claim 8, comprising:

identical-PID determining means for performing determination whether identical PIDs exist on the two TS

sides of the packets that are to be multiplexed with each other through said insertion; and

PID-converting means for performing rewriting of PIDs of packets on at least one of the two TS sides so that opponent-side PIDs are differentiated therefrom for packets that are determined by said identical-PID determining means to have identical PIDs.

11. A digital broadcast receiving apparatus comprising:

first necessary-packet extracting means for extracting packets corresponding to necessary PIDs in a first TS that is input;

second necessary-packet extracting means for extracting packets corresponding to necessary PIDs in a second TS that is input;

PID-converting means for rewriting PIDs of all packets extracted on said two TS sides so as to be identical from one another; and

packet-inserting means for performing insertion of said PID-rewritten packets on the two TS sides to be mutually inserted to thereby generate a new TS.

12. A digital broadcast receiving apparatus as defined in claim 11, wherein said PID-converting means memorizes a start PID number that is used for the

subsequent multiplexing processing, and updates said start PID number every time the multiplexing processing is executed.

13. A digital broadcast receiving apparatus as defined in claim 9, wherein the PID-converting means is configured to convert said PIDs so as to be opened to a user.

14. A digital broadcast receiving apparatus as defined in claim 7, comprising:

NULL-packet counting means for counting NULL packets coming from said overwritten-side TS;

packet counting means for counting post-extraction NULL packets on the TS side adding packets through said overwriting;

comparing means for comparing a NULL-packet count value output by said NULL-packet counting means with a packet count value output by said packet counting means; and

NULL-packet-priority specifying means for specifying NULL-packet areas with priority as unnecessary-packet areas corresponding to said unnecessary PIDs when said former count value is equal to or greater than the latter count value.

15. A digital broadcast receiving apparatus as defined in claim 7, wherein said packet-overwriting means is configured such that, when a detection frequency of NULL packets in said overwritten-side TS is high, said NULL-packet areas are given priority as overwrite objects; and concurrently, when overwriting of said extracted packets to NULL packets is suspended, and the number of packets held pending for the overwriting reaches a predetermined value, the overwriting thereof is executed to other unnecessary-packet areas.

16. A digital broadcast receiving apparatus as defined in claim 1, wherein a plurality of TSs including packets to be multiplexed through either the overwriting or the insertion are input as objects, the plurality of TSs being selectable from

(a) a TS including viewing-desired broadcast program data,

(b) a TS including broadcast-program-table related data,

(c) a TS including downloadable data,

(d) a TS including image-recording-desired broadcast program data, and

(e) TSs including other broadcast program data; and packets in the plurality of selected TSs are multiplexed.

17. A digital broadcast receiving apparatus comprising:

tuners for receiving modulated waves of digital broadcast waves;

a plurality of groups of demodulator sections for demodulating signals output from said tuners to thereby output TSs;

an input section for selecting a plurality of desired TSs to thereby specifying output destinations;

unnecessary-packet detecting means for detecting unnecessary-packet areas corresponding to unnecessary PIDs in a first TS input from one of said demodulator sections;

necessary-packet extracting means for extracting packets corresponding to necessary PIDs in a second TS input from one of said demodulator sections, which is different from said one of said demodulator sections; and

packet-overwriting means for overwriting packets extracted by said necessary-packet extracting means to said unnecessary-packet areas detected by said unnecessary-packet detecting means in the TS,

wherein a custom transfer stream (which will be referred to as a CTS, hereinbelow) output from said packet-overwriting means is output to said output destination specified by said input section.

18. A digital broadcast receiving apparatus comprising:

tuners for receiving modulated waves of digital broadcast waves;

a plurality of groups of demodulator sections for demodulating signals output from said tuners to thereby output TSs;

an input section for selecting a plurality of desired TSs to thereby specifying output destinations;

first necessary-packet extracting means for extracting packets corresponding to necessary PIDs in a first TS input from one of said demodulator sections;

second necessary-packet extracting means for extracting packets corresponding to necessary PIDs in a second TS input from one of said demodulator sections, which is different from said one of said demodulator sections; and

packet-inserting means for performing insertion of said extracted packets on the two sides so as to be mutually inserted to thereby generate a new TS, wherein a CTS output from said packet-inserting means is output to said output destination specified by said input section.

19. A digital broadcast receiving apparatus comprising:



said digital broadcast receiving apparatus as defined in claim 16; and

apparatuses arbitrarily selected from

- (a) an image-playback apparatus,
- (b) an audio-recording apparatus, and
- (c) a digital-image recording apparatus.

20. A digital-broadcast receiving method comprising the steps of:

registering necessary PIDs regarding a first TS that is input;

registering necessary PIDs regarding a second TS that is input;

detecting unnecessary PIDs based on comparison between said registered necessary PIDs regarding the input first TS and necessary PIDs regarding the first TS;

extracting packets corresponding to said registered necessary PIDs regarding the second TS from the input second TS; and

overwriting packets extracted from said second TS to the unnecessary-packet areas corresponding to said unnecessary PIDs detected in said first TS.

21. A computer-readable recording medium containing a digital-broadcast-receiving software program for executing the steps of:

registering necessary PIDs regarding a first TS that is input;

registering necessary PIDs regarding a second TS that is input;

detecting unnecessary PIDs based on comparison between said registered necessary PIDs regarding the input first TS and necessary PIDs regarding the first TS;

extracting packets corresponding to said registered necessary PIDs regarding the second TS from the input second TS; and

overwriting packets extracted from said second TS to the unnecessary-packet areas corresponding to the unnecessary PIDs detected in said first TS.